

Notice of Allowability

Application No.

10/529,538

Examiner

Charles Chow

Applicant(s)

HARA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/26/2007.
2. ☒ The allowed claim(s) is/are 1, 11.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Detailed Action

1. This office action is for amendment dated 11/26/2007.

Allowable Subject Matter

2. The following is an examiner's statement of reasons for allowance:

Claims 1, 11 are allowable over the prior art of record. The prior arts fail to teach the allowable features, singly, particularly, or in combination or rendering obviousness.

Applicant has amended independent claim 1 with allowable limitation features from the objected claim 10, and canceled claim 2-10 [page 5 of applicant amendment. 11/26/2007].

The dependent claim 11 is also allowable due to their dependency upon the allowable independent claims above and the having additional claimed feature.

The prior arts fail to teach the features in independent **claim 1**, as underlined in below, together with the mode control setting signal to set the power amplifier to linear or saturation operating region, for

a transmitter for outputting a transmitting signal while amplifying power of the transmitting signal comprising:

a variable gain amplification means for amplifying an input modulated signal based on the transmitting signal and controlling the gain based on a control signal;

a power amplification means connected to the rear of the variable gain amplification means;

a multiplier for multiplying the amplitude signal of the transmitting signal and the phase-modulated signal obtained by modulation of the phase signal of the transmitting signal to thereby apply amplitude modulation, wherein the power amplification means performs power amplification on the basis of the amplitude-modulated signal.

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a power amplification control means for controlling a supply voltage of the power amplification means on the basis of the control signal, wherein:

the power amplification means has a linear operating mode for amplifying power by using a linear operating region in input-output power characteristic of the power amplification means;

a saturation operating mode for amplifying power by using a saturation operating region in input-output power characteristic of the power amplification means;

the control signal includes an operating mode set signal for setting the operating mode of the power amplification means;

the power amplification means operates in either operating mode on the basis of the operating mode set signal.

The closest prior art, **Heinonen et al. [US 5,530,923]** teaches a transmitter in Fig. 1 having power amplifiers 10, 12, based on the linear/non-linear transmitting mode [Fig. 1 & col. 3, lines 37-46, abstract, col. 4, lines 26-44], the control signal 34, 35 from control means 24, for adjusting the gain of amplifier 18 & 10 [col. 4, lines 48-55 & col. 4, lines 48-55]; the mode control means 25/switch 14/16 set the power amplifier 10/12 into linear or non-linear/saturation mode [Fig. 1 & col. 3, line 61 to col. 4, line 2], but fails to teach a multiplier for multiplying the amplitude signal of the transmitting signal and the phase-modulated signal obtained by modulation of the phase signal of the transmitting signal to thereby apply amplitude modulation, wherein the power amplification means performs power amplification on the basis of the amplitude-modulated signal.

Ngo et al. [US 2003/0155,972 A1] teaches the V_{ramp} for controlling the supply voltage of amplifier state 62, 64 for the saturated mode and the linear mode of operation [Fig. 2/ Fig. 4, paragraph 0027-0028, 0001], but fail to teach the limitation features missed by Heinonen

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above.

Okubo et al. [US 2004/0041,628 A1] teaches the temporal change in the envelope of the input signal [Fig.8(a)-Fig. 8(c) & paragraphs 0143-0149]; the compensation for the amplitude, phase distortion [paragraph 0150], but fail to teach the limitation features missed by Heinonen above.

Other prior arts in below are also considered, but they fail to teach the above allowable features.

Biedka et al. [US 2004/0247,041 A1] teaches the amplitude modulation AM 113 applied to supply terminal of PA 109 for amplifying the VCO signal having phase modulation signal from PM 103 [Fig. 1, paragraph 0012-0013].

Mochizuki [US 6,580,901 B1] teaches the control unit 8, Verror, V_p, for controlling the supply voltage of power amplifier 2 [Fig. 6 & its corresponding description in the specification] based on the instantaneous output feedback from amplifier 2 for the saturation type high power amplifier [abstract].

Mattila et al. [US 5,432,473] teaches the digital transmission mode and the analog transmission mode with bias control 7 for power amplifier 3, having the gain control 1 and driver amplifier [Fig. 1, abstract].

Bachman, II et al. [US 2005/0017,801 A1] teaches the feedback from power amplifier 10 via coupling 38 for controlling the power of amplifier 10 via power supply 74 [Fig. 1, abstract, & its corresponding description in the specification].

Ayun et al. [US 7,250,818] teaches the feedback of detected transmitter output power at 107 [Fig. 2] & providing V_{cont} signal to voltage regulator 151 for power amplifier PA 101 [abstract, Fig. 2 & its corresponding description in the specification].

Tanaka et al. [US 2004/0198,258 A1] teaches the amplitude modulation to PA 6 via power supply voltage generator 3 and phase rectangular window 13 [abstract].

Schwent et al. [US 5,060,294] teaches the linear mode and the saturation mode of a power amplifier for a radiotelephone having mode control switch 206/196 [col. 12, lines 10-57, Fig. 9, abstract]

Kim et al. [Us 7,129,786 B2] teaches the bias circuit of high power consumption mode 319 and low power consumption mode 317 [Fig. 3, abstract].

Yamawaki et al. [US 2005/0176,388 A1] teaches the phase control loop and the amplitude control loop [Fig. 1, abstract, & its corresponding description in the specification].

Other prior arts are also considered. They are: **Sevic et al. [US 2003/0102,910 A1]**, **Shimizu [US 2002/0031,191 A1]**, **Toyota et al. [US 2004/0203,553 A1]**, **Staszewski et al. [US 2004/0151,257 A1]**, **Sahota et al. [US 2004/0023,620 A1]**, **Maerzinger et al. [US 2006/0154,626 A1]**, **Bengtsson et al. [US 2002/0071,497 A1]**, **Black [US 5,559,471]**, **Boesch et al. [US 6,298,244 B1]**, **Tsutsui et al. [US 2002/0030,541 A1]**, **Korol [US 7,009,447 B2]**, **Bar-David [US 6,437,641 B1]**, **Morimoto et al. [US 2006/0159,198 A1]**, **Kim et al. [US 6,020,787]**, **Robinson et al. [US 2004/0266,366 A1]**, **Sander et al. [US 2002/0177,420 A1]**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion


3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles C. Chow whose telephone number is (571) 272-7889. The

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examiner can normally be reached on 8:00am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Charles Chow .

November 29, 2007.


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